REMARKS

In response to the Official Action mailed October 22, 2003, Applicants amend their application and request reconsideration. In this Amendment, no claims have been added or canceled so that claims 1-8 remain pending. No new matter has been added.

Claims 1, 3, 7, and 8 are amended to clarify that the method of those claims uses a photometric stereo technique to measure, evaluate, and grade fabric/textile structure/garment appearance (see page 16, lines 3-15 of the patent application). Claims 1, 3, and 7 are amended to clarify that the pictures are captured of the fabric surface under illumination from at least two different directions (see page 7, lines 12-25 of the patent application). Claims 1, 3, and 7 are further amended to further clarify that the captured images are used to derive surface normal gradients (see page 9, lines 6-8 of the patent application). Claim 3 is further amended to recite that the lighting sources for the beams are comprised in a single housing (see page 12, lines 21-22 of the patent application). Claims 2 and 8 are amended to clarify that parallel light beams are shined from four different directions (see page 7, lines 12-25 of the patent application).

Claims 1-2 and 7-8 were rejected as unpatentable over Berger et al. (US Patent 5,739,904, hereinafter Berger) in view of Shofner et al. (US Patent 5,533,145, hereinafter Shofner). That rejection is respectfully traversed. Applicants note that a copy of Shofner was not provided with the Official Action, nor was it cited on the PTO-892 form. If the Examiner intends to make Shofner of record, Applicants respectfully request a corrected PTO-892 form.

The combination of Berger and Shofner fails to teach or suggest all of the limitations of amended claims 1 and 7. Those claims recite that a photometric stereo technique is used to measure, evaluate, and grade fabric/textile structure/garment appearance. By contrast, Berger discloses that a triangulation technique is used to optically measure yarn packaging (see column 5, line 63 to column 6, line 17 of Berger). As shown by Figure 1 of Berger, the triangulation technique uses only one beam of light, instead of the parallel beams used with the photometric stereo technique. Furthermore, there is no suggestion to modify Berger to use the photometric stereo technique, even if parallel beams were used. Accordingly, the combination of Berger and Shofner fails to teach or suggest this limitation of the invention.

Berger and Shofner also fail to teach or suggest shining parallel beams from at least two different directions onto the surface of the fabric. Shofner admittedly teaches the use of two beams, and from two different directions, but Shofner does not teach *parallel beams* that are shined onto the surface of the fabric, and done so from at least two different directions (see Fig. 8 of Shofner). Accordingly, this limitation is absent in the combination of Berger and Shofner.

Furthermore, the combination of Berge and Shofner also fails to teach or suggest analyzing the reflected images captured to derive surface normal gradients based on intensities of light reflected from a number of evenly distributed points on the surface. As commonly known in mathematics, the surface normal is a three-dimensional vector that is perpendicular to a given surface. The surface normal gradient is the gradient of the surface normal, and, as with any gradient, is a vector of partial derivatives. The surface normal gradient is obtained using the calculated irradiance of a surface element (see pages 7-9 of the patent application). The Official Action contends that the aforementioned limitation is taught by Berger at column 7, lines 50-57 of Berger. This contention, however, cannot be maintained with respect to amended claims 1 and 7. The cited text of Berger discloses merely that light intensity may be used to observe elevations of scanning points, not to derive mathematical parameters such as the surface normal gradient. Thus, the combination of Berger and Shofner fails to teach or suggest all of the limitations of amended claims 1 and 7. Accordingly, *prima facie* obviousness has not been established, and the rejection should be withdrawn.

Claim 3 was rejected as unpatentable over Berger in view of Shofner, and in further view of Morooka et al. (US Patent 5,204,913, hereinafter Morooka). That rejection is respectfully traversed.

The combination of Berger, Shofner, and Morooka fails to teach or suggest all of the limitations of claim 3. As previously explained with respect to claims 1 and 7, the Official Action's reliance on Berger and Shofner is erroneous. Berger and Shofner do not teach or suggest the limitations as alleged by the Official Action.

Moreover, Morooka also fails to teach or suggest deriving surface normal gradients. As previously explained, the surface normal is a three-dimensional vector that is perpendicular to a given surface. The surface normal gradient is the gradient of the surface normal, and, as with any gradient, is a vector of partial derivatives. The surface normal gradient is obtained using the calculated irradiance of a surface element (see pages 7-9 of the patent application). An angle of inclination is not a gradient normal to a surface, nor is it a summation of gradients. The cited text of Morooka provides no teaching or suggestion of vectors of any kind (see column 4, lines 50-60 of Morooka). The angle of inclination is simply that: an angle. Accordingly, Morooka fails to teach this limitation of amended claim 3.

Furthermore, the combination of Berger, Shofner, and Morooka fails to teach parallel lighting beams that are comprised in the same housing. In Shofner, which teaches multiple lighting sources, none of the lighting sources are parallel, nor are they integrated in the same housing (see Figure 8 of Shofner). Thus, the combination of Berger, Shofner, and Morooka fails

to teach or suggest all of the limitations of amended claim 3. Accordingly, *prima facie* obviousness has not been established, and the rejection should be withdrawn.

Claims 4-6 are allowed, and thus require no remarks.

Reconsideration and withdrawal of the rejections are earnestly solicited.

Respectfully submitted,

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